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Title : Variability in growth rates of northern fur seals (*Callorhinus ursinus*) throughout the late Holocene

Category : Ecology

Student :

Preferred Format : Either Oral or Poster Presentation

Abstract : Density-dependent variability in somatic growth has been suggested by numerous studies for northern fur seals (*Callorhinus ursinus*) based on age-specific measurements of body size. However, extension of this observation to archaeological or paleontological collections requires a different metric that accommodates partially or fully skeletonized remains.

This first portion of this study tests the hypothesis that age-specific measurements of fur seal skeletal size vary inversely with population level in the same manner as body size. Indeed, mandible samples deriving from the Pribilofs during two different population levels in the 20th century show significant differences in growth rates. Importantly, these samples pre-date the development of extensive commercial groundfish exploitation in the area, suggesting that population level, rather than prey abundance, is driving this relationship.

The second portion of this study uses the same approach to analyze 230 mandibles and sectioned teeth from the Ozette archaeological site on the Washington coast to test the hypothesis that prehistoric subsistence harvest pressure negatively impacted the fur seal population. Although they do not breed there now, evidence presented elsewhere suggests that fur seals were breeding on or near the WA coast as recently as 200 years ago. If prehistoric subsistence hunting caused this distribution change, and presumed population decline, the growth rates of fur seals should increase over time.

In point of fact, the growth rates of the Ozette fur seals are stable throughout the 600-year sequence. Furthermore, the mandibles from Ozette are smaller in any given age class than mandibles from the Pribilofs at any point during the 20th century. However, it cannot be determined at this time if the smaller mandibles from Ozette reflect a population maintained at the upper limits of carrying capacity or latitudinal differences in body size.